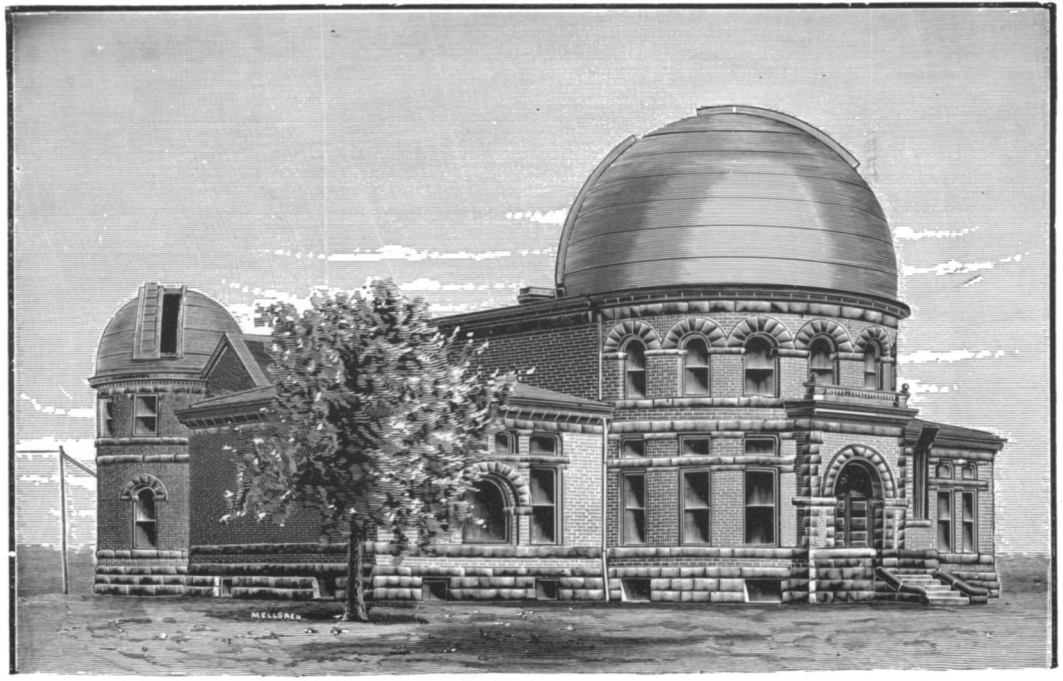


CARLETON COLLEGE OBSERVATORY.

PUBLICATIONS

OF THE

Astronomical Society of the Pacific.

VOL. III. SAN FRANCISCO, CALIFORNIA, MARCH 28, 1891. NO. 15.

CARLETON COLLEGE OBSERVATORY.

BY WM. W. PAYNE, DIRECTOR.

The first building used for an Observatory at CARLETON College, was erected in the summer of 1877. It was a wooden structure consisting of a main part, twenty feet square, two stories high, with basement and two wings, each twelve by fifteen feet in size. The west wing was the transit room, in which was a FAUTH 3-inch instrument, and the east wing was devoted to the library and used as a study for the Director.

In the large room on the first floor of the main building were placed the clocks, telegraph instruments, meteorological instruments, chronograph and other minor apparatus belonging to the Observatory. Above this was the circular equatorial room, having a diameter of seventeen feet, in which was mounted the 8-inch CLARK equatorial telescope.

The time of the Observatory has been kept by means of a chronometer by BOND, and two fine HOWARD clocks. The gravity escapement clock and the chronometer are regulated to sidereal time, and the GRAHAM dead-beat is a mean-time clock. The GRAHAM clock is kept on standard time of the 90th meridian, and automatically transmits the daily time-signals to the various railway companies having central offices in Minneapolis and St. Paul. These lines in the aggregate amount to more than 10,000 miles. In the autumn of 1886 the new Observatory building was begun, and October 21, the corner-stone was laid in the presence of a large assembly of people.

The new building was nearly completed and the instruments transferred during the summer of 1887. Both domes were constructed by Messrs. WARNER and SWASEY of Cleveland, Ohio, and are, respectively, seventeen feet and thirty feet in diameter.

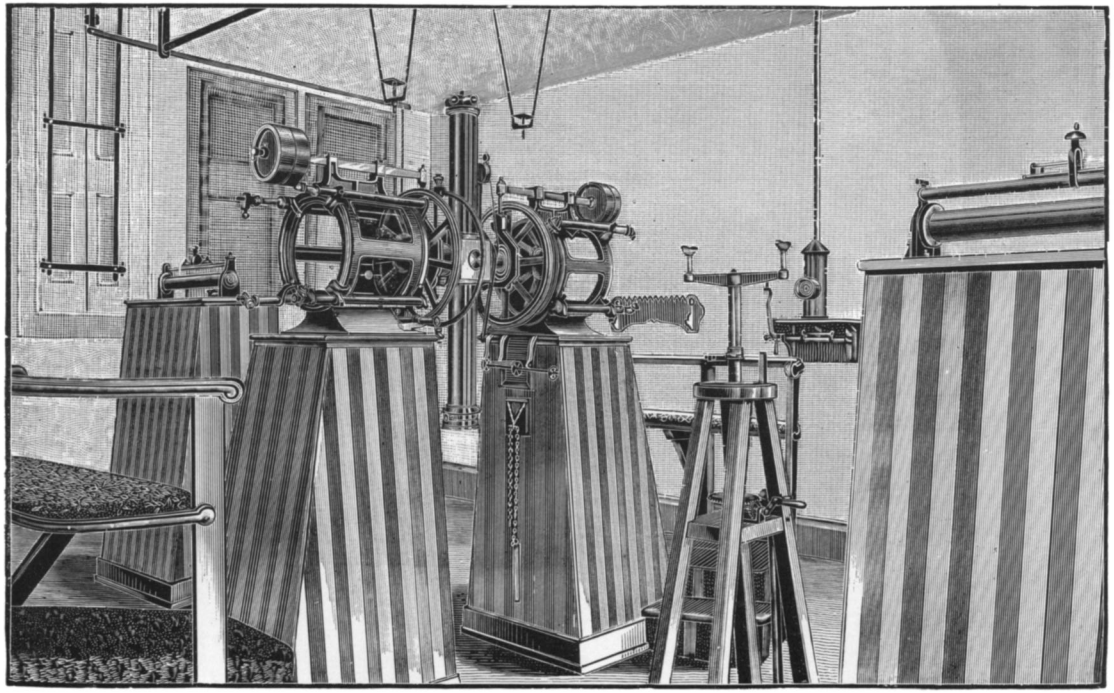
The frontispiece gives a view of the building from the southwest.

From extreme points outside, the structure is 78 feet east and west, and 100 feet north and south. The east wing is the meridian circle room. It is 27 feet and 6 inches north and south, and 22 feet 10 inches east and west and 12 feet between floor and ceiling. The walls of the building are one foot thick, with four windows and transoms on each of the north and south sides. The meridian opening in the roof is 30 inches; on the sides 26 inches.

The meridian circle was made by A. REPSOLD UND SÖHNE, Hamburg, in 1885, and mounted in 1887. Its telescope has a clear aperture of 4.80 inches, and a focal length of 57.5 inches. It is made of three pieces in the ordinary way. The parts of the tube carrying the eye-piece and object-glass are interchangeable. The pivots are 1.44 in. diameter, of steel, and finely polished. The pier-heads are made as the REPSOLDS usually furnish them, with Ys and counterpoising apparatus and microscope holders. The pressure of the pivots in the Ys is about twelve pounds. All piers have a footing in coarse gravel from ten to thirteen feet below the surface of the ground, and are built solid of stone and cement to the first floor. Those of the meridian circle are constructed of brick above the first floor, covered with heavy felt cloth and cased in wood three-fourths of an inch thick.

The meridian circle was a present to the Observatory from JAMES J. HILL, President of the Great Northern Railway, and cost $5000. It has two circles, one graduated to two-minute spaces and the other to degrees only. The dividing is done on a narrow band of silver which is 21.8 inches in diameter and neat, sharp and regular, so that the probable error of a single microscope setting is less than 0″.2. Both circles are movable, so that they may be set at any desired nadir reading. Eight microscopes [four for each pier] are provided for reading the circles. The microscope micrometers have screws, two turns of which are equivalent to two minutes on the circle, and the heads of the screws are divided into sixty parts so that the reading is made directly to seconds of arc. This is sufficient to give a general idea of this important instrument.

The central room in the main part of the building, first floor, is semi-circular on the south side. The large equatorial pier is in the middle of the room, surrounded by a case with glass doors and shelves for photographs of astronomical interest, and such other objects as ought to find place in a collection for popular illustration of astronomical themes. This room also contains two HOWARD astronomical clocks encased in the large pier, a BOND chronometer and case, a



REPSOLD MERIDIAN CIRCLE. CARLETON COLLEGE OBSERVATORY.

table of telegraphic instruments to which the lines of the different railroads are run, for the daily time-signals, and a chronograph properly mounted and connected with the two clocks and with all the telescopes belonging to the Observatory.

The west wing is the same size as the east one, and is used for the library and for the study of the Director and that of Dr. H. C. WILSON, his assistant. Shelves for books are arranged on three sides of the room, below which are three tiers of drawers, averaging ten inches deep and about two and a half feet in length. The library now contains 1300 volumes, with some reference books for each of the principal lines of study in mathematics and astronomy. In the north middle room is mounted, in the prime-vertical, a 3-inch FAUTH transit instrument. This instrument is to be used in latitude work for student exercise. In the small dome is placed the CLARK 8¼-inch equatorial telescope. This instrument is provided with an 8¼ photographic corrector and plate-holder, and the instrument does fine work in celestial photography for one of its size. It needs an enlarging eye-piece. The new FAUTH spectroscope adapted to it, which uses either a prism or a ROWLAND grating, greatly enlarges its facilities for instruction or original work.

In a few months the 16-inch equatorial by BRASHEAR and HASTINGS, with mounting by WARNER and SWASEY, will be completed. This instrument is to be provided with a fine, large universal spectroscope by Mr. BRASHEAR. The spectroscope will be provided with a photographic attachment as a means of recording spectra. The clock-work and chronograph attachment to this equatorial are to be the best of their kind. All instruments of the Observatory will be furnished with electric light, and the lecture-room is to be provided with a strong arc light for the study and illustration of various spectra.

A class of three post-graduate students is now in the first term of regular study and work in a course of three years of mathematics and astronomy.

CORRECTIONS TO WATSON'S THEORETICAL ASTRONOMY.

BY W. W. CAMPBELL.

I believe that no extensive list of corrections to WATSON'S "*Theoretical Astronomy*" has as yet been published. The following errata have been detected and are communicated to the Society with